

REMARKS/ARGUMENTS

Claims 1, 2, 4 and 6-47 are pending in the application, claims 1, 36 and 43 being independent. Claims 1, 2, 6, 7, 13, 14, 21, 25, 26, 33, 36, 43 and 46 have been amended. Claims 3 and 5 have been cancelled.

Claims 1, 2, 4 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Lundstrom et al (US 3777723). However, it is respectfully submitted that claim 1 clearly patentably distinguishes over Lundstrom by reciting, *inter alia*, that the claimed purge ports that lead radially out of the housing to facilitate the discharge of the residual exhaust gases under the effect of centrifugal force generated by rotor rotation, are associated with air inlet ports located in at least one of the two end walls of the rotor housing and partially overlap the purge ports to admit air into the cavity and inter-lobe space in preparation for the subsequent combustion cycle. This outward movement of the residual exhaust gases under the effect of centrifugal force generated by rotor rotation causes a low pressure volume in the cavity which has the effect of sucking fresh air through the air inlet ports because of their location in at least one of the two end walls of the rotor housing and partially overlapping the purge ports. The residual burnt gases are centrifuged radially into the purge ports almost instantaneously. The fresh air is consequently also centrifuged diametrically outwards into the purge ports causing a clean cool flow of air through the male and female cavities prior to the fuel injection and compression phases. The effect of this configuration is to deliver a clean charge of fresh air to the compression phase.

Figs. 1 and 2 of Lundstrom illustrate the relative positioning of the primary exhaust ports 49 and 51 and the purge ports 48 and 50 leading radially out of the

housing to facilitate the discharge of the residual exhaust gases. However, the air inlet ports 40, 42, 44, 46 of Lundstrom would not have the effect of causing fresh air to be centrifuged diametrically outwards into the purge ports causing a clean cool flow of air through the male and female cavities prior to the fuel injection and compression phases because of the location of the inlet ports in the main housing with the scavenging outlet channels/purge ports 48, 50 therebetween and completely separate from the inlet ports instead of the inlet ports being located in at least one of two end walls of the rotor housing and partially overlapping the purge ports to admit air into the cavity and inter-lobe space in preparation for the subsequent combustion cycle as claimed. The other cited references are similarly deficient. Accordingly, claim 1 is submitted as clearly allowable.

Claims 2, 4 and 6 depend from claim 1 and are also submitted as clearly allowable. Also claim 6 further patentably distinguishes over the cited references by reciting that the inlet ports are located in both end walls of the housing.

Claims 36 and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Habsburg-Lothringen (US4003349). According to the Examiner, Habsburg-Lothringen discloses a rotary engine including a landing zone 24 in the housing to provide for the gradual re-engagement between the rotor tip and the portion of the housing contacted thereby after the tip passes the combustion chamber. However, the so-called landing zones 24 of Habsburg-Lothringen are recesses that are located in the region where the outer ends of the lobes move away from the respective inner cylindrical surface 15 during rotation, not downstream of the combustion chamber in the direction of rotor rotation as recited in claim 36. Nor do these recesses provide for the gradual re-

engagement between the tip and the portion of the housing after the tip passes the combustion chamber as claimed. Instead, the recesses act as pressure compensation channels and increase the volume of both the compression and expansion zones by a predetermined value. (column 4, lines 5-21). Accordingly, claim 36 is submitted as clearly allowable.

Claim 42 depends from claim 36 and further patentably distinguishes over Habsburg-Lothringen by reciting that the landing zone is in the form of a curved ramp.

Claims 43-47 are rejected under 35 U.S.C. 102(b) as being anticipated by Nilsson (US 3664778).

Regarding claim 43, according to the Examiner, Nilsson discloses a rotary engine including a first seal (152, left side of Fig. 9) provided in a first channel (in 150) in the rotor (50); a second seal (152, right side) provided in a second channel of the rotor (150, Fig. 9), an end of the first channel meeting an end of the second channel (atop Fig. 9); and a blocking element (166) that is provided in the region where the end of the first channel meets the end of the second channel for preventing exhaust gases generated during the combustion cycle of the rotary engine from entering the channels between the seals and the rotor (Figs. 9-15). However, the so-called blocking element (166) of Nilsson is not provided in the region where the end of the two channels meet for preventing exhaust gases generated during a combustion cycle of the rotary engine from entering both channels between the seals and the rotor as claimed. Instead, two separate cylindrical sealing bodies 166 are provided, one for each channel. Accordingly, claim 43 is submitted as clearly allowable.

Claims 44-47 depend from claim 43 and are submitted as allowable for substantially the same reasons.

Claims 7, 13, 14 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lundstrom in view of Habsburg-Lothringen.

Regarding claim 7, the Examiner contends that the modified Lundstrom device discloses the elements as disclosed in the rejection of claims 1 and 36 including Habsburg-Lothringen disclosing a male tip seal for sealing between the housing and lobe, and that it would have been obvious to utilize a landing zone in the housing following the combustion chamber in order to allow the seals of each rotor lobe to gradually contact the housing which prevents damage to the seals and reduces noise from the impact of the lobe onto the housing. However, as previously discussed, the recesses 24 of Habsburg-Lothringen are not a first landing zone provided on the housing downstream of the combustion chamber in the direction of rotor rotation, and do not provide for the gradual re-engagement between the male tip seal and the housing after the male tip seal passes the combustion chamber as recited in claim 7. Accordingly, claim 7 is submitted as allowable in its own right in addition to being dependent on claim 1.

Claims 13 and 14 depend from claims 7 and 1, respectively, and further patentably distinguish over the cited references, claim 13 by reciting that the first landing zone is in the form of a curved ramp, and claim 14 by reciting a second landing zone provided on the housing downstream of the combustion chamber in the direction of rotor rotation that provides for the gradual re-engagement between the claimed leading female tip seal and the housing after the leading female tip seal passes the

combustion chamber. Claim 20 depends from claim 14 and further patentably distinguishes over the cited references by reciting that the second landing zone is in the form of a curved ramp.

Claims 8-11, 15-18 and 21-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lundstrom in view of Habsburg-Lothringen as applied to claims 7 and 14 and further in view of Nilsson. However, claims 8-11 depend from claim 7 and claims 15-18 and 21-25 depend from claim 14 and are submitted as allowable for substantially the same reasons. Also claim 25 further patentably distinguishes over the cited references by reciting that the trailing female tip seal has a shoulder portion that interacts with an undercut portion in the trailing channel to limit the amount of movement of the trailing female tip seal in a radial direction with respect to the female rotor in the trailing channel such that the trailing female tip seal does not substantially contact the second landing zone.

Claims 26-30 depend from claim 1 and further patentably distinguish over the cited references by reciting, *inter alia*, a blocking element that is provided where the end of a first channel containing a first seal meets the end of a second channel containing a second seal for preventing exhaust gases entering these channels between the seals and the male rotor and from travelling from one of the channels to the other channel, similar to claim 43 previously discussed.

Claims 31-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lundstrom in view of Nilsson. The Examiner acknowledges that Lundstrom does not disclose the claimed blocking element that is provided where an end of a first channel in the female rotor meets an end of a second channel of the female rotor for preventing

exhaust gases from entering these channels between seals provided therein and the female rotor and from travelling from one of the channels to the other channel as recited in these claims, but contends this is taught by Nilsson. Applicant disagrees for the reasons previously discussed. Accordingly, claims 31-35 are submitted as allowable in their own right in addition to being dependent on claim 1.

Claims 37-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Habsburg-Lothringen in view of Nilsson. However, these claims ultimately depend from claim 36 and are submitted as allowable for substantially the same reasons.

Claims 12, 19 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over the modified Lundstrom device. In particular, the Examiner contends it would have been *prima facie* obvious to modify Lundstrom to obtain the claimed length of the landing zone allegedly because such a modification would have been considered a mere design consideration. Applicant respectfully disagrees, in that this is hindsight reconstruction which does not establish obviousness under 35 U.S.C. 103. Moreover, claim 12 depends from claim 7, claim 19 depends from claim 14 and claim 41 depends from claim 36 and are further submitted as allowable for substantially the same reasons.

For the foregoing reasons, this application is now believed to be in condition for final allowance of all of the pending claims 1, 2, 4 and 6-47, and early action to that end is respectfully requested.

In the event an extension of time is necessary, this should be considered a petition for such an extension. If required, fees are enclosed for the extension of time and/or for the presentation of new and/or amended claims. In the event any additional fees are due in connection with the filing of this reply, the Commissioner is authorized to

charge those fees to our Deposit Account No. 18-0988 (Attorney Docket
CALLP0104WOUS).

Respectfully submitted,

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